

# THE ANNALS

AND

## MAGAZINE OF NATURAL HISTORY.

[FIFTH SERIES.]

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"..... per litora spargite muscum,  
Naiades, et circum vitreos considite fontes:  
Pollice virgineo teneros hic carpite flores:  
Floribus et pictum, divæ, replete canistrum.  
At vos, o Nymphæ Craterides, ite sub uidas;  
Ite, recurvato variata corallia trunco  
Vellite mucosis e rupibus, et mihi conchas  
Ferte, Deæ pelagi, et pingui conchyliis succo."  
*N. Parthenii Giannettasii* Ecl. 1.

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No. 85. JANUARY 1885.

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I.—*On the Species of Micippa, Leach, and Paramicippa, Milne-Edwards.* By E. J. MIERS, F.L.S., F.Z.S.

[Plate I.]

WHILE engaged in the revision of the nomenclature of the species of these genera for the Report on the Brachyura of the 'Challenger' collection, now in course of preparation, I have recognized some errors of determination into which I have been led, in common with other students of the group; and having now subjected the whole of the material in the British Museum and 'Challenger' collections to a careful reexamination, I think it useful to publish the results of my study of the group, to redescribe the species, and present a synopsis of their arrangement, which will be found to differ in some important particulars from that given by Dr. R. Kossmann in his work on the Malacostraca of the Red Sea\*, and to include references to some species and varieties described since it appeared.

\* 'Malacostraca in Zoolog. Ergebn. einer Reise in die Küstengebiete des Rothen Meeres,' p. 4 (1877).

When Dr. Leach, in 1817, described the genus *Micippa* \* he took as the type the *Micippa cristata* (*Cancer cristatus*, Linnæus), which had been long previously described and figured by Rumphius as *Cancer spinosus*.

Milne-Edwards in 1834 † referred a second species, designated by him *Micippa philyra* (Herbst), to this genus, and established (p. 332) the genus *Paramicippa* to include the *Micippa platipes* of Rüppell, from the Red Sea, and a new species, *P. tuberculosa*, of uncertain habitat, characterizing the latter genus principally by the non-retractile eyes, the incomplete orbits, whose postforaminal portion was not developed, and the flattened and dilated second joints of the exterior antennæ. The first two of these characters, however, fail in *Paramicippa platipes* (Rüppell), which at that time was apparently known to Milne-Edwards only from Dr. Rüppell's description and figure.

In 1856 Dr. A. Gerstäcker ‡ published some observations on the typical specimens of *Micippa philyra* (Herbst) and *M. thalia* (Herbst); he redescribed the latter species, and also described as new a species, *M. miliaris*, from the Red Sea, which is regarded by Dr. Kossmann as a variety of *Micippa thalia* (Herbst).

In 1877 Dr. Kossmann (*l. c.* p. 4) admitted the following species as well established:—1. *M. cristata* (Linn.); 2. *M. philyra* (Herbst), with the varieties *mascarenica*, Kossm., and *platipes*, Rüpp.; 3. *M. thalia*, Herbst, with the varieties *caledonica*, Kossm., *miliaris*, Gerstäcker, *indica*, Kossm., and *aculeata*, Bianconi. He also sustained the genus *Paramicippa*, taking as the type *P. tuberculosa*, M.-E. He erroneously regarded the *Micippa spinosa* of Dr. Stimpson as synonymous with *M. cristata*, this species being in fact one of the best characterized of the genus.

In 1879, in my synopsis of the families and genera of the Oxyrhyncha, not having then seen Dr. Kossmann's work, I followed some previous authors in taking Rüppell's species (*M. platipes*) as the type of the genus *Paramicippa*, and distinguished the latter genus by the less vertically deflexed rostrum and the dilated palms of the chelipedes in the male, whose fingers, when closed, meet only at the tips—characters which, perhaps, obtain only in Rüppell's species (not in *P. tuberculosa*), and, moreover, cannot be regarded as of generic importance §.

\* Zoological Miscellany, iii. p. 15 (1817).

† Hist. Nat. Crust. i. p. 329.

‡ Archiv f. Naturgeschichte, xxii. p. 106.

§ Journ. Linn. Soc., Zool. xiv. p. 662 (1879). I am unaware of the

In the present revision of the genus *Micippa* six species are regarded as well established, besides several marked varieties, some of which may prove to be specifically distinct. I follow Dr. Kossmann in restricting the genus *Paramicippa* to the single species *P. tuberculosa*, with which I am able to identify the species described by myself as *Micippa parvirostris* by the aid of drawings of Milne-Edwards's type specimen, very kindly sent to me by Prof. A. Milne-Edwards, which are here published with his permission.

#### MICIPPA.

*Micippa*, Leach, Zoological Miscellany, iii. p. 15 (1817); Milne-Edwards, Hist. Nat. Crust. i. p. 329 (1834); Kossmann, Malacostraca in Zoolog. Ergebnisse einer Reise in die Küstengeb. des Rothen Meeres, p. 4 (1877); Miers, Journ. Linn. Soc., Zool. xiv. p. 661 (1879).

Carapace nearly oblong, depressed, rounded behind, with the dorsal surface spinose, granulated or tuberculated, sometimes with a lateral series of marginal spines or spinules. Interorbital space broad, the orbits deep, with one or two fissures in the superior margin and usually in the inferior margins, which are sometimes very incomplete. Præocular spine present or absent. Rostrum broad, lamellate, and vertically or nearly vertically deflexed, more or less distinctly bilobated, and sometimes armed with lateral marginal spines. Eyes (in the species I have examined) moderately elongated, and capable of being retracted within the orbital cavity. Antennæ with the basal joint usually very much enlarged and sometimes armed with one or two small distal spines or tubercles; it occupies the space between the base of the rostrum and the orbit and generally constitutes a part of the inferior wall of the orbit; the following joint is sometimes slightly dilated and is not concealed by the rostrum. The merus of the exterior maxillipedes is distally truncated, with the antero-external angle more or less rounded and the antero-internal angle emarginate. The chelipedes (in the male) are moderately developed or short; palm somewhat dilated and compressed or subcylindrical; fingers meeting along the inner margins when closed, or with a large intermarginal hiatus. Ambulatory legs moderately elongated, with the joints subcylindrical, sometimes granulated, but without spines or tubercles, the dactyli nearly straight, little shorter than the penultimate joints.

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distinctive characters employed by R. Neumann in his memoir entitled 'Systematische Uebersicht der Gattungen der Oxyrhynchen' (Leipsic, 1878), never having seen a copy of this work.

The species are, I believe, restricted to the shallower waters of the Indo-Pacific or Oriental region.

The species enumerated in the present revision may be distinguished by the following diagnostic characters:—

- A. Rostrum armed with eight spines (three lateral spines on each side of the two distal and terminal spines).

Carapace (in the adult) with numerous dorsal spines. Chelipedes with the palms elongated, not dilated . . . . 1. *Micippa cristata* (Linn.).

- B. Rostrum armed with four spines (one lateral spine on each side of the two distal and terminal spines). Carapace without dorsal spines.

Carapace convex. Basal antennal joint with distal spines, the next joint elongated and but little dilated distally. Chelipedes (in the adult male) with the palms but little enlarged . . . . 2. *Micippa mascarenica*, Kossmann.

Carapace somewhat depressed. Basal antennal joint without distal spines, the next (mobile) joint compressed and distally dilated. Chelipedes rather short, with the palms enlarged; fingers meeting only at tips, with a wide intermarginal hiatus . . . . 3. *Micippa philyra* (Herbst).

- C. Rostrum terminating in two lobes, which have the antero-internal angles acute or toothed and the antero-external angles rounded or armed with a small tubercle or tooth.

Rostrum thin, deflexed. Carapace usually armed with dorsal spines. Chelipedes (in the adult males) with the palms short, enlarged; fingers with a wide intermarginal hiatus at base . . . . 4. *Micippa spinosa*, Stimpson.

Rostrum thickened, inflexed. Carapace without dorsal spines. Chelipedes with the palms not enlarged, fingers with scarcely any intermarginal hiatus 5. *Micippa curtispina*, Haswell.

- D. Rostrum deeply notched or bifid, terminating in two narrow acute lobes or spines.

Carapace with or without dorsal spines. Chelipedes with the palms slender, not dilated; fingers with scarcely any intermarginal hiatus . . . . 6. *Micippa thalia* (Herbst).

### *Micippa cristata.*

*Cancer spinosus*, Rumph, d'Amboinische Rariteitkamer, p. 15, pl. viii. fig. 1 (1741).

*Cancer cristatus*, Linn. Mus. Lud. Ulricæ, p. 443 (1764); Syst. Nat. p. 1046 (1766).

*Cancer bilobus*, Herbst, Nat. Krabben u. Krebse, p. 245, pl. xviii. fig. 98 (1790).

*Maia cristata*, Latreille, Atlas de l'Encycl. Méth. d'Hist. Nat. pl. cclxxx. fig. 1 (1818).

*Micippa cristata*, Leach, Zool. Miscell. iii. p. 16, pl. cxxviii. (1817); M.-Edwards, Hist. Nat. Crust. i. p. 330 (1834); Crustacés in Cuvier's Règne Anim. (ed. 3), Atlas, pl. xxxi. fig. 2; Adams and White, Crustacea in Zoology of H.M.S. 'Samarang,' p. 16 (1848); Bleeker, Acta Societatis Indo-Neerlandicae, ii. p. 15 (1857); Kossmann (part.), Malacostraca in Zoolog. Ergebnisse einer Reise in die Küstengebiete des Rothen Meeres, p. 5, pl. iii. fig. 1 (1877).

The carapace is depressed and its dorsal surface is covered with granules or small tubercles, which tend to become spiniform, and with longer spines, disposed as follows:—two on the postfrontal region of the carapace between the orbits; three in a transverse series on the front of the gastric region, and one behind these; two contiguous spines on the cardiac region, four or five on each branchial region; one on the intestinal region and two on the posterior margin; the lateral margins of the carapace are armed with six long spines, and the superior margins of the orbits are also six-spined, the præocular spine being strongly developed and the postocular bifid and terminating in two spines. The rostrum is vertically deflexed, lamellate, deeply notched at the distal extremity, which is armed with two spines, behind which, on the lateral margins on each side, are three others. The basal joint of the antenna is very considerably enlarged, granulated at the distal extremity and terminating in a spine (the infraocular spine) at the antero-external angle; the following (mobile) joint is not dilated. The merus of the exterior maxillipedes is distally truncated and crenulated, with the antero-external angle subacute or obtuse. The chelipedes (in the adult male) are considerably developed, with the merus, wrist, and palm granulated; palm rather more than twice as long as broad, and but little enlarged; fingers with but a small intermarginal hiatus. The ambulatory legs are moderately developed, with the joints subcylindrical, granulated.

An adult male from Java measures as follows:—Length of carapace to base of rostrum 24 lines (51 millim.); length of rostrum  $8\frac{1}{2}$  lines (18 millim.); length of a chelipede  $50\frac{1}{2}$  lines (107.5 millim.); length of first ambulatory leg about  $49\frac{1}{2}$  lines (105 millim.).

*Hab.* Indo-Malayasian seas; Philippine Islands; Java (*coll. Brit. Mus.*).

In very small specimens the spines of the dorsal surface of the carapace and the præocular spine are not developed.

*Micippa philyra.*

*Cancer philyra*, Herbst, Nat. Krabbe u. Krebse, iii. Heft 3, p. 51, pl. lviii. fig. 4 (1803).

*Micippe platipes*, Rüppell, Beschreib. 24 kurzschwänzigen Krabben des R. Meeres, p. 8, pl. i. fig. 4 ♀ (1830); Heller, Sitz. der Akad. Wien, xliii. (1), p. 299, pl. i. fig. 2 (1861).

*Paramicippa platipes*, M.-Edw. Hist. Nat. Crust. i. p. 333 (1834).

*Micippa bicarinata*, Adams and White, Zoology of H.M.S. 'Samarang,' Crust. p. 16 (1848).

*Micippa hirtipes*, Dana, Amer. Journ. of Sci. & Arts (ser. 2), xi. p. 268 (1851); Crust. in U. S. Explor. Exped. xiii. (1) p. 90, pl. i. fig. 4 (1852), var.

*Micippa spatulifrons*, A. M.-Edw. N. Arch. Mus. Hist. Nat. viii. p. 240, pl. xi. fig. 3 (1872), var.

*Micippa philyra*, var. *platipes*, Kossmann, Zool. Ergebn. einer Reise in die Küstengeb. des R. Meeres, p. 7, pl. iii. fig. 3 (1877).

*Micippa philyra*, var. *latifrons*, Richters, Decapoda in Möbius's Beitr. zur Meeresfauna der Insel Mauritius und der Seychellen, p. 142, pl. xv. figs. 1-5 (1880).

This form in many of its characters bears a close resemblance to the following (*Micippa mascarenica*); but adult males may, I think, always be distinguished by the following characters:—

The carapace is broader in proportion to its length and much more depressed; the rostrum is less abruptly deflexed; the spines at the distal extremity of the basal antennal joint are obsolete, and the following (mobile) joint of the peduncle is dilated and compressed. The chelipedes (in the adult males) have the palm dilated and compressed, less than twice as long as broad; the fingers with a wide intermarginal space when closed and meeting only at the distal extremities. An adult male has the following dimensions:—

Length of carapace to base of rostrum nearly 12 lines (25 millim.); breadth  $10\frac{1}{2}$  lines (22.5 millim.); length of a chelipede  $14\frac{1}{2}$  lines (31 millim.); length of first ambulatory leg 14 lines (30 millim.).

*Hab.* Indo-Pacific or Oriental region.

The series in the collection of the Museum is small, and the adult and fully-grown examples are all from the Red Sea and Gulf of Suez. The specimens from the Philippines, designated *Micippa bicarinata* by White, are not fully grown; a small male—length of carapace to base of rostrum nearly  $4\frac{1}{2}$  lines (9 millim.)—has the palm of the chelipedes nearly as in the adult specimens from the Red Sea, but the second antennal joint is less dilated, although compressed. There are also in the collection small specimens from the Fijis presenting similar characters as regards the antennæ.



*Micippa mascarenica*.

*Micippa philyra*, Leach, Zool. Miscell. iii. p. 16 (1817); M.-Edwards, Hist. Nat. Crust. i. p. 330 (1834); Guérin-Ménéville, Icon. Crustacés, pl. viii. bis, fig. 1; A. M.-Edwards, N. Arch. Mus. Hist. Nat. viii. p. 239, pl. xi. fig. 2 (1872); Richters, Decapoda in Möbius's Beiträge zur Meeresfauna der Insel Mauritius und der Seychellen, p. 143, pl. xv. figs. 6, 7 (1880); Miers, Crust. in Zool. Coll. H.M.S. 'Alert,' p. 198 (1884).

♀ *Micippa philyra*, var. *mascarenica*, Kossmann, Malacostraca in Zool. Ergebnisse einer Reise in die Küstengeb. des Rothen Meeres, p. 7, pl. iii. fig. 2 (1877); Lenz & Richters, Abhandl. Senck. Naturf. Gesellsch. xii. p. 421 (1881).

*Micippa superciliosa*, Haswell, Proc. Linn. Soc. N. S. Wales, iv. p. 446, pl. xxvi. fig. 2 (1880); Cat. Austr. Crust. p. 25 (1882), var.

*Paramicippa asperimanus*, Miers, Crust. in Zool. H.M.S. 'Alert,' p. 525 (1884), var.

The carapace is suboblong, convex, and rounded behind, deeply concave in front of the branchial regions, coarsely granulated on the dorsal surface; the lateral margins are armed with about six distant unequal spines or spinules; the orbits are completely defined, with a deep notch or fissure in the superior margin, and behind this a smaller notch; the postocular spine is well developed; the inferior margin has two fissures defining the position of the basal antennal joint; the rostrum is vertically or nearly vertically deflexed, armed at the distal extremity with four strong triangulate lobes or teeth. The basal antennal joint is very greatly enlarged; its distal margin is armed with several small spines or tubercles, and with a stronger spine at the antero-external angle, which constitutes the infraocular orbital spine; the following (mobile) joints are but little dilated. The chelipedes (in the adult male) are rather slender; palm slightly compressed and little enlarged, smooth and granulated; fingers meeting along their inner margins when closed, or with a distinct intermarginal hiatus.

*Hab.* Indo-Pacific or Oriental region.

An adult male in the collection of the British Museum from the Mauritius (*M. Robillard*) has the following dimensions:—Length of carapace to base of rostrum nearly 21 lines (44 millim.); length of rostrum  $9\frac{1}{2}$  lines (20 millim.); length of a chelipede 25 lines (53 millim.); length of first ambulatory leg  $29\frac{1}{2}$  lines (62 millim.).

This form, which I, after Milne-Edwards and Guérin-Ménéville, have hitherto designated *M. philyra*, Herbst, cannot be regarded as the typical condition of that species, since Dr. Gerstäcker expressly notes that in Herbst's *Cancer philyra* the second antennal joint is short and distally dilated; and Dr. Kossmann's name for it must be adopted, since he distinctly figures it under the designation *mascarenica*.

The specimens which, with much doubt, were designated *M. asperimanus* in the Report on the Crustacea of H.M.S. 'Alert,' cannot be regarded as specifically distinct; it may be, indeed, that the examination of a series of specimens would show that *M. mascarenica* must itself, after all, be regarded (as its author considers it to be) as a mere variety of *M. philyra*.

*Micippa spinosa.*

*Micippa spinosa*, Stimpson, Proc. Acad. Nat. Sci. Philad., p. 217 (1857);  
Haswell, Cat. Austr. Crust. p. 26 (1882).

*Paramicippa spinosa*, Miers, Cat. New-Zeal. Crust. p. 9 (1876); Crust.  
in Rep. Zool. H.M.S. 'Alert,' p. 199 (1884).

In this species the carapace is depressed, somewhat uneven, closely and coarsely granulated on its dorsal surface, which, both in the male and female, is armed with long spines disposed as follows:—three in the median line, of which two on the gastric and one on the cardiac region, and a strong spine on the postero-lateral margins of each branchial region, between which and the well-developed postocular spine there are from six to nine smaller spines on the lateral margins of the carapace; the posterior margin is spinuliferous; the spinules usually continued in a lateral series beneath the lateral branchial spines and above the bases of the two posterior ambulatory legs. The fissures of the superior orbital margins are narrow and deep. The pterygostomian regions are granulated. The rostrum is obliquely deflexed and widens slightly from the base to the antero-lateral angles, which are broadly rounded; it is armed at its distal extremity with two small teeth, which are separated by a rather deep triangular notch. The basal antennal joint is smooth externally, but granulated on its distal margin; the next joint is not dilated; the merus of the exterior maxillipedes is broadly rounded at the antero-external angle. The chelipedes (in the adult male) are moderately developed; merus not distally carinated but granulated; carpus and palm granulated, the palm rather short and enlarged, fingers meeting only at the apices with a wide intermarginal hiatus; the ambulatory legs are hairy, merus with a small spinule at the distal extremity. An adult male has the following dimensions:—Length of carapace to base of rostrum nearly 8 lines (17 millim.); breadth of carapace nearly  $7\frac{1}{2}$  lines (15.5 millim.); length of a chelipede  $9\frac{1}{2}$  lines (20 millim.); of first ambulatory leg nearly 12 lines (25 millim.).

*Hab.* East and South Australia (in shallow water, not exceeding 15 fathoms, H.M.S. 'Challenger'): New Zealand (*coll. Brit. Mus.*).



*Micippa spinosa*, var. *affinis*.

*Paramicippa affinis*, Miers, Ann. & Mag. Nat. Hist. (ser. 5) iv. p. 13 (1879).

Of this variety, described by me as a distinct species in 1879, from a single female from Bass's Straits, found among the fishes of H.M.S. 'Challenger,' there are, among the 'Challenger' Brachyura, two males, also from Bass's Straits, taken off E. Monceur Island (Station 162), in 38 fathoms.

It is distinguished by the absence of well-developed spines from the dorsal surface of the carapace, which are represented sometimes by elevated granules or small tubercles, by the form of the front, which does not widen to the distal extremity (but has parallel lateral margins) and has a very small terminal notch, and by the smoother basal antennal joint. Length of carapace to base of rostrum (in an adult male) 6 lines (12.5 millim.); breadth of carapace  $5\frac{1}{2}$  lines (11.5 millim.); length of a chelipede about 7 lines (15 millim.), of first ambulatory leg about  $7\frac{1}{2}$  lines (16 millim.).

This variety, together with the typical *Micippa spinosa*, will be figured in my Report on the Brachyura of the 'Challenger' expedition.

*Micippa curtispina*.

*Micippa curtispina*, Haswell, Proc. Linn. Soc. N. S. Wales, iv. p. 446, pl. xxv. fig. 1 (1880); Catalogue Australian Stalk- & Sessile-eyed Crustacea, p. 25 (1882).

This remarkable species is allied to *M. affinis*, but distinguished by the form of the rostrum, which is vertically deflexed and curves inwards towards the distal extremity, which is emarginate, and by the slender chelipedes, whose merus-joints are more strongly carinated above at the distal extremity.

In the specimens in the Museum collection which I refer to this species, the rostrum is considerably thickened and the lateral distal lobes are obsolete, or nearly obsolete, so that the lateral margins converge uninterruptedly to the emarginate apex. The postocular orbital tooth is very small; the pterygostomian regions are turgid; the basal antennal joint is granulated, and the following joint is not, or is but very slightly, dilated; the merus of the exterior maxillipedes is small, and its antero-external angle less broadly rounded than in *M. affinis*; the distal carina of the merus of the chelipedes, both in the larger female and smaller male, is entire, not dentated; palm very slender, and fingers nearly straight, with scarcely any intermarginal hiatus. The larger (female) specimen has the following dimensions:—Length of carapace to base of rostrum 10 lines (21 millim.), breadth about  $7\frac{1}{2}$  lines (15 millim.);

length of a chelipede  $8\frac{1}{2}$  lines (18 millim.), of first ambulatory leg nearly 10 lines (21 millim.).

*Hab.* Port Denison, 5 fathoms (*Haswell*), Torres Straits (Prince-of-Wales Channel and Thursday Island, 3-9 fathoms) (*H.M.S. 'Alert'*).

I have examined a small specimen of this species in a collection from Singapore, made by Surgeon-Major S. Archer.

### *Micippa thalia.*

*Cancer thalia*, Herbst, Naturg. Krabben u. Krebse, iii. (3) p. 50, pl. lviii. fig. 3 (1803).

*Paramicippa sevspiniigera*, White, List Crust. Brit. Mus. p. 9 (1847).

*Micippa thalia*, Gerstäcker, Archiv f. Naturgesch. xxii. p. 109 (1856); A. M.-Edwards, N. Arch. Mus. Hist. Nat. viii. p. 238, pl. xi. fig. 1 (1872); Miers, Crustacea in Zoolog. Coll. H.M.S. 'Alert,' p. 198 (1884).

*Micippa inermis*, Haswell, Proc. Linn. Soc. N. S. Wales, iv. p. 445, pl. xxvi. fig. 3 (1880); Cat. Australian Crustacea, p. 24 (1882).

*Micippa pusilla*, Bianconi, Mem. Accad. Bologna (serie seconda), ix. p. 205, pl. i. fig. 1 (1869).

*Micippa thalia*, var. *caledonica*, Kossmann, Malacostraca in Zool. Ergebn. einer Reise in die Küstengeb. des R. Meeres, p. 8, pl. iii. fig. 4 (1877).

*Micippa thalia*, var. *indica*, Kossmann, l. c. p. 8 (1877).

The carapace is moderately convex or depressed, suboblong or broader at the branchial regions; its dorsal surface is tomentose and closely granulated, and usually armed with spines upon the dorsal surface, which, when present, are disposed as follows:—A strong supraocular orbital spine, two median spines on the gastric region of the carapace placed one behind the other, and one on each branchial region, and sometimes two on the posterior margin; the upper margin of the orbit also has three spines behind the supraocular spine, and the lateral margins of the carapace are armed with from six to nine spines or spinules. The rostrum is nearly vertically deflexed, deeply emarginate, and terminates in two strong acute lobes or spines, the apices of which usually curve somewhat outwardly. The basal antennal joint is granulated and considerably dilated, but less so than in some species of the genus, and bears a spine at its antero-external angle (the infraocular orbital spine); behind this the orbit is incomplete. The chelipedes (in the adult male) are rather small; merus sometimes granulated, carpus and palm nearly smooth, the merus not carinated above; the palm slender and not enlarged; the fingers nearly straight, and without any or with but a very small intermarginal hiatus. The ambulatory legs are very tomentose, the merus and carpus joints are sometimes thickened, and the merus may have a small distal spinule, but the joints are otherwise nearly smooth, not spinuliferous.

*Hab.* Indo-Pacific or Oriental region (from the Red Sea and coast of Natal to New Caledonia).

In that which Dr. Gerstäcker distinguishes as the typical form of this very variable species (from an examination of Herbst's type specimen), the anterior dorsal spines of the carapace are apparently not developed, but there are distinct lateral branchial and posterior marginal spines. Length of carapace and rostrum (in a female) 18 (German) lines, breadth 12 lines.

I have seen no adult examples presenting exactly these characters, the posterior marginal spines being deficient. A small male from the coral reefs at Pa-tchu-Sau (*H.M.S.* 'Samarang'), in the British-Museum collection, has well-developed lateral epibranchial spines, but differs in some other particulars.

*Micippa thalia*, var. *miliaris*.

*Micippa miliaris*, Gerstäcker, Archiv f. Naturgesch. p. 110 (1856).

*Micippa thalia*, var. *miliaris*, Kossmann, t. c. p. 8 (1877).

This form is apparently distinguished from the typical *M. thalia* only by the well-developed lateral marginal spines of the carapace. The second joint of the antennæ is slightly dilated towards the distal extremity.

*Hab.* Red Sea (*Gerstäcker*).

*Micippa thalia*, var. *aculeata*.

*Micippa thalia*, De Haan, Crustacea in v. Siebold's Fauna Japonica, p. 98, pl. xxiii. fig. 3, and pl. G (1839).

*Micippa aculeata*, Bianconi, Mem. Accad. Bologna, iii. p. 103, pl. x. fig. 2 (1851).

*Micippa Haani*, Stimpson, Proc. Acad. Nat. Sci. Philad. p. 217 (1857).

*Micippa thalia*, var. *aculeata*, Kossmann, t. c. p. 8, pl. iii. fig. 5 (1877).

This variety is distinguished by having the dorsal spines of the carapace as well as (usually) some or all of the lateral marginal spines well developed.

*Hab.* Seas of China and Japan (*De Haan*, *Stimpson*), Mozambique (*Bianconi*). An adult male from Mozambique is in the British-Museum collection, presented by Prof. Bianconi, and labelled "*Micippa cornuta*, Bianconi"\*.

The dimensions of the male from Mozambique are as follows:—Length of carapace to base of rostrum  $14\frac{1}{2}$  lines

\* The *Cancer cornutus* of Linnæus, which Milne-Edwards considers to be a species of this genus, differs in the arrangement of the dorsal spines of the carapace from any species with which I am acquainted, except perhaps this species and *Micippa cristata*, from which latter it is apparently distinguished by the smooth, terete, naked chelipedes, &c. It may be identical with a variety of *M. thalia*.

(30·5 millim.); length of rostrum 5 lines (10·5 millim.); breadth of carapace  $13\frac{1}{2}$  lines (28·5 millim.); length of a chelipede  $16\frac{1}{2}$  lines (35 millim.); length of first ambulatory leg  $20\frac{1}{2}$  lines (43·5 millim.).

#### PARAMICIPPA.

*Paramicippa*, M.-Edwards (partim), Hist. Nat. Crust. i. p. 332 (1834);  
Kossmann, Malacostraca in Zoolog. Ergebnisse einer Reise in die  
Küstengebiete des Rothen Meeres, p. 5 (1877).

The distinctive characters of this genus, if restricted to the single species *P. tuberculosa*, M.-E., are as follows:—The carapace is depressed, broadly pyriform or nearly orbiculate in outline; the orbits are scarcely defined either above or below the eye-peduncles, which are slender, straight, and not completely retractile; the postocular lobe, which terminates in two spines or teeth, is well developed. The basal antennal joint is considerably enlarged, yet not dilated so greatly as in *Micippa*; it is nearly oblong in form, with the distal extremity slightly concave, and bears a small spine or tooth at the antero-external angle; the next joint, which is placed on a level with the superior margin of the front, is very short, triangulate or cordate, and dilated and flattened. The form of the chelipedes in the male is not known; the ambulatory legs are robust and rather short, and their merus- and carpus-joints are covered above with strong tubercles, which tend to become spines.

#### *Paramicippa tuberculosa*. (Pl. I. fig. 1.)

*Paramicippa tuberculosa*, Milne-Edwards, Hist. Nat. Crust. i. p. 333  
(1834).

*Micippe parvirostris*, Miers, Ann. & Mag. Nat. Hist. (ser. 5) iv. p. 13,  
pl. iv. fig. 9 (1879).

Carapace broadly pyriform, very slightly convex, and covered with numerous tubercles, which are sometimes acute and spinuliform; lateral margins armed with six or seven short spines, which are more or less distinctly granulated on the margins. The rostrum is small, deflexed in its distal half, and divided by a median fissure into two compressed lobes, which are slightly concave at the distal extremity; the postocular lobe, as noted above, is strongly developed and terminates in two spines or teeth. The ocular peduncles are slightly enlarged at base and constricted near to the distal extremity, and project beyond the superior margin of the orbit for a distance about equal to the width of the rostrum at base. The basal antennal joint is not greatly dilated at the distal extremity the next joint is inserted between the base of the

rostrum and the inner canthus of the eye, and the third joint is slender, cylindrical, and longer than the second. The merus of the exterior maxillipedes is considerably dilated at the antero-external angle. A few hairs upon the carapace and legs. Colour brownish.

*Hab.* —? (South Australia, Port Lincoln: *coll. Brit. Mus.*)

The description, slightly amplified, is adapted from Milne-Edwards's work; the figure from sketches, very kindly sent by Prof. A. Milne-Edwards, of the type specimen in the Paris collection. The eye-peduncles should probably be represented as more distinctly constricted near to the distal extremity, and the second antennal joint as more dilated, as in Milne-Edwards's description and the type of *M. parvirostris* in the British Museum. This latter further differs from the figure now given only in having the penultimate as well as the antepenultimate joints of the legs sometimes armed with a few tubercles.

#### EXPLANATION OF PLATE I.

*Fig. 1.* *Paramicippa tuberculosa*, M.-Edw. Adult female, magnified (from a sketch of the type specimen in the collection of the Muséum d'Histoire Naturelle, Paris).

*Fig. 1 a.* Dorsal view of the front of the cervical region.

*Fig. 1 b.* Inferior view of part of the cervical region, showing the form of the basal antennal joint and exterior maxillipedes.

*Fig. 1 c.* Chelipede.

#### II.—*Observations on some Freshwater Sponges.*

By Professor FRANZ VEJDOVSKY\*.

DR. W. DYBOWSKI not long since sent me some specimens, well preserved in alcohol, of the freshwater sponge designated by him *Spongilla sibirica*, with the request that I would submit them to an examination, and prepare the figures thus obtained for his memoir relating to the above-mentioned species †. I undertook this investigation the more willingly because, since the appearance of Dr. Dybowski's work upon the freshwater sponges of the Russian empire, I was very

\* Translated by W. S. Dallas, F.L.S., from a separate copy, furnished by the author, of the paper in the 'Sitzungsberichte der k. böhmischen Gesellschaft der Wissenschaften,' 1884, pp. 55-60, pl. ii.

† As Dr. Dybowski's parcel was rather late in reaching me and he had in the meantime sent his memoir to press, I publish these observations as a supplement.